



Manual

Version 1.4

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Disclaimer

POWERbreathe International Limited and the consensus group which designed the algorithm and the assessments underlines that these assessments should be regarded as a help tool to improve inspiratory muscle training and monitor training progress only. The final assessment of inspiratory muscle condition, and any decisions regarding diagnosis, treatment and other interventions is not implied within the Breathe-Link software.



Chapter 1 General Information

1.1 Contents of the Package

- Diskettes containing the Breathe-Link software
- Breathe-Link User Manual
- Software License agreement

If any of the Items listed above are missing please contact the distributor.

1.2 Hardware and Software Requirements

Here is a list of the **minimum** hardware and software requirements.

- Intel Pentium 2.40Ghz
- Minimum of 1Gb RAM
- 50Mb of hard disk space (Low usage)
- Microsoft Windows XP or later
- Screen Resolution 1024 by 796 normal screen (4:3). 1280 by 768 widescreen (5:3)
- Mouse and Keyboard input device
- POWERbreathe K series (Models K4, K5 or KH2 only)
- USB cable

1.3 Setting Recommendations

We recommend the following configuration

- The monitor desktop area screen resolution 1280 by 1024 normal screen (4:3). 1600 by 900 widescreen (5:3). This will enhance graphical detail of all screens of the Breathe Link software.
- 100Mb of hard disk space (High usage)
- Graphic Card Accelerator
- External USB hubs connected to external USB devices that draw more than 500amps should not be connected when the POWERbreathe K series device is connected.



Frequently Asked Questions

There seems to be no resistance for the first two breathes.

For the first two breaths of the POWERbreathe K series device are setup breaths so that the device can calculate correct parameters for your training. The setup breaths have a low load setting of 3cmH₂O; consequently you will find the first two breaths very easy to overcome. For breaths 3 and 4 a gradual load set to 50% and 75% of your maximum training load is introduced. Subsequent breaths are set at 100% of your maximum training load.

The POWERbreathe K series is not working when I reach breath 5 the valve fails to OPEN

The POWERbreathe K series device introduces a gradual increase of load for the first 5 breaths of the training session. Once you have reached breath 5

the load is set at its maximum target-training load, and therefore becomes more difficult to overcome. The valve will not activate until you have overcome the maximum training load set by the device. Consequently if the maximum training load set is too great for you to overcome it may seem that the device is not functioning correctly. We recommend: If you are operating in an automatic mode set the intensity level to a lower level. Alternatively change to manual mode and set the load manually starting with a low load and increase the load by 5 cmH₂O until you have a training load that you can complete a complete session (30 breaths) with some difficulty.

Can I download my results saved on Breathe-Link software to my POWERbreathe K series device?

No.

Can I download my results saved on my POWERbreathe K series device on to the computer?

No. Data can only be saved on to the computer when the POWERbreathe K series device is connected to the computer and Breathe-Link application is running.

I cannot change the load for the first two breaths in all training modes! / The first two breaths always have a load of 3cmH₂O?

The first two breaths are setup breaths so that the device can calculate training parameters used to set up an ideal variable load training profile. The setup breaths will always be set at a very low load of 3cmH₂O and is counted as a part of your overall training session.

During an Auto and Manual training session I cannot adjust the training loads for the first 5 breaths with the load adjuster.

The first two breaths are setup breaths so that the device can calculate training parameters used to set up an ideal variable load training profile. The

setup breaths will always be set at a very low load of 3cmH₂O and count as a part of your overall training session. Breaths 3 and 4 are set at a gradual percentage of calculated training load, for consistency the device will not allow you to increase or decrease the load until after breath 5.

When I increment and decrement the training load the POWERbreathe Device seems to lock up.

In most cases you should not see a lock up of the POWERbreathe K series device, However in some rare instances communications between the Breathe-Link software and POWERbreathe K may be corrupted by abuses behaviour of these buttons. Therefore when adjusting the training load using the up and down buttons you should increment and decrement the values slowly and in a positive fashion, a 1 second pause for each click of the adjustment buttons. POWERbreathe International Ltd views any behaviour beyond the one described above as unexpected abusive behaviour.

I sometimes get weird spikes on my graphs?

Make sure the valve is not sticky. If the valve is blocked then you may see erroneous results.

Keep getting clean valve message?

Clean valve thoroughly with recommended sterilising tablets. Move the valve head back and forth (Open too Close) while rinsing under mid warm water until it moves freely without any major resistance. Wait until fully dried before attaching to the POWERbreathe K series device. For more detail please refer to POWERbreathe K series manual section **11 Care and Maintenance**

The POWERbreathe K series device fails to operate when plugged into the PC?

Make sure that the correct drivers have been installed. Uninstall and reinstall the Breathe-Link software making sure that you agree with the terms and conditions, and tick the agree box. Click OK when asked to install drivers.

In some instance where the battery of the POWERbreathe K series device is very low, the drivers fail to detect the POWERbreathe. In this instance connect the POWERbreathe K series device as normal and briefly push the ON button of the POWERbreathe. The associated drivers will then be detected and normal connection procedures should be applied.

Make sure the POWERbreathe K series device is switched OFF before attempting to connect with the Breathe-Link Software.

Make sure no other device is connected to the PC that draws more than 500amps. If the problem still persists contact supplier of the device.

When I start up the Breathe-Link Software the software seems to crash/unable to perform any tasks?

You can only access the features of the Breathe-Link software with a valid POWERbreathe K series device is connected and synchronised with the software. Close the Breathe-Link software and connect a valid POWERbreathe K series device, then start up Breathe-Link software.

Make sure you have correctly installed the drivers

When I start up the Breathe-Link Software the software I get an invalid device connected even though I have connected the POWERbreathe K series device?

Make sure the software you have downloaded or been supplied with is correct for the model of POWERbreathe K series that you have. POWERbreathe K series versions are not interchangeable between Breathe-Link K4, K5 and KH2 units.

Neck strain when using POWERbreathe:

Neck problems are very rare when using POWERbreathe but have been known to occur when breathing against very heavy loads and in people with a history of neck injury e.g. whiplash. Our advice is as follows:

- In order to warm-up before training with POWERbreathe, perform a warm-up session mode; alternatively perform 10 breaths set the load to 80% of you normal resistance (e.g. if you normally train at level 5, set the POWERbreathe to level 4). Perform a set of 30 breaths at this level prior to training at your normal intensity. This should help warm-up the muscles in the neck and chest
- Now perform your normal set of 30 breaths - try to breathe from the chest and diaphragm, keeping your neck as relaxed as possible. If you are still experiencing discomfort, reduce the load slightly - it is important to take controlled breath as well as pushing yourself. Remember that the same principles apply to POWERbreathe as with any other resistance training – if you perform uncontrolled movements at high intensities then you may be increasing the risk of muscle strain.

If the pain continues, we would advise that you consult your doctor or chiropractor as the problem is likely to be due a slight displacement of a vertebrae (of the kind experienced when one gets a 'crick' in the neck') rather than to a muscle strain

The load results on the POWERbreathe unit and pressure value on the Breathe-Link IMT suite do not correlate.

The POWERbreathe unit load result is a different measurement compared to the Breathe-link software pressure result. The POWERbreathe unit load displayed corresponds to the highest training load achieved (highest weight lifted) during your breathing training session.

The Breathe-Link pressure represents the average pressure 'average weight lifted' generated by the breathing muscles. Arguably this gives you a better indication of how the breathing muscles are performing against a variable load training session. A higher load result means that you are training your inspiratory muscles harder, leading to stronger muscles.

The values produced on the POWERbreathe K series device and Breathe-Link IMT suite do not correlate.

Values from the POWERbreathe device and Breathe-Link software should not vary more than +/-10%. To consistently breath at the same rate and effort for each new session is impossible and consequently variations of results will be observed. Ideally if you are performing a test or training session with or without the Breathe-Link software you should try to perform them at the same time and same effort to get a accurate overview of your breathing muscle performance.

Custom routine performed on the POWERbreathe; what will the load set show on the results screen.

The POWERbreathe unit will only show the highest load set in the custom routine. It is advised to use the Breathe-Link software to get a more accurate view of pressure load. The values shown on the Breathe-Link software is the average pressure (average weight lifted) for the entire session. It is possible to analysis the data in greater detail in the Review Screen see Chapter 10 Data Review for more information.

Minimum age

There are no safety reasons for preventing young children (above 3 years of age) from using POWERbreathe. However the following factors may affect their ability to use the device effectively:

- They must be able to fit the mouthpiece in their mouth. The POWERbreathe Plus mouthpiece is smaller and therefore more suited to children
- They must be old enough to understand how to effectively perform the breathing exercises
- They must have the motivation themselves or the parental encouragement to ensure that they continue to perform the exercises.

The POWERbreathe K series Device fails to activate the drivers correctly

The POWERbreathe unit will only show the highest load set in the custom routine. It is advised to use the Breathe-Link software to get a more accurate view of pressure load. The values shown on the Breathe-Link software is the average pressure (average weight lifted) for the entire session. It is possible to analysis the data in greater detail in the Review Screen see Chapter 10 Data Review for more information.

Troubleshooting

Data Communications Note:

In the rare event of minor Firmware – Software data communications issues occurring Breathe-Link will time out as a safety precaution. If this happens try the following resolution strategies.

- a) Click Breathe-Link icon and select Desynch. Then select Connect.

- b) Disconnect and reconnect the PBK K5 unit.
- c) Shutdown and restart the Breathe-Link software.

Important Notice to User Load adjustment buttons:

In very rare instances adjusting the load in an uncontrolled and abuse manner may cause communication problems between the POWERbreathe and Break-Link software. Therefore when adjusting the training load using the up and down buttons you should increment and decrement the values slowly and in a positive fashion a 1 second pause for each click of the adjustment buttons. POWERbreathe International Ltd views any behaviour beyond the one described above as unexpected abusive behaviour.



Chapter 2 Introducing Breathe-Link

2.1 Description of Breathe-Link software with POWERbreathe K series

Is a complete suite of features that extends the functionality of the POWERbreathe K series devices. Breathe-Link IMT software is a complete suite for real-time data visualisation, analysis and logging for the POWERbreathe K series devices. Distinctive features include:

- Easy to use multiple graph views of Load, Power, Flow, Energy and Volume in real-time
- View real-time training inspiratory flow curves against volume with personal best markers
- View real-time training inspiratory power curves against volume with personal best markers
- View real-time training inspiratory load curves against volume with personal best markers
- View real-time training inspiratory energy curves against volume with personal best markers
- Graphical view of training session to encourage and motivate performance
- Multi-detailed view of training sessions allowing trend visualization
- View trends of major indexes of all the session data
- View trends of major indexes of all the individual breath data
- Create personal custom training routines that can be downloaded onto the POWERbreathe K series handheld device
- Test your maximum strength of your inspiratory muscles in real-time with clear colour coding of each test performed

- Test your Peak Inspiratory Flow (PIF) in real-time with clear colour coding of each test performed
- Reads files in a simple CSV-style format



Chapter 3 Installation and Setup Breathe-Link

In this section we discuss the installation procedure of the Breathe-Link software.

3.1 Installing Breathe-Link software

1. Make sure the POWERbreathe K Series device is not plugged into the PC
2. Place the Breathe-Link CD into the CD drive of your computer. The software will automatically start up the installation procedure. To manual start up an installation procedure go *My Computer* icon, selected the CD driver and push enter. Windows explore should open, Double click installer file named '*BreatheLink installer*'.
3. The main install menu will appear. Follow the instructions to install the Breathe-Link software with relevant drivers.
4. Copyright and licence agreement will appear if you agree to the terms and conditions check the checkbox indicating that you agree and click on next.
5. To create a start up menu option check the relevant check box and click finish.

3.2 Connecting POWERbreathe K series device to PC

To connect the POWERbreathe K series device to your PC, You need to have installed the Breathe-Link software and relevant drivers first.

1. Using the USB cable supplied, connect the mini USB end of the cable to the POWERbreathe K series device at the charging port.

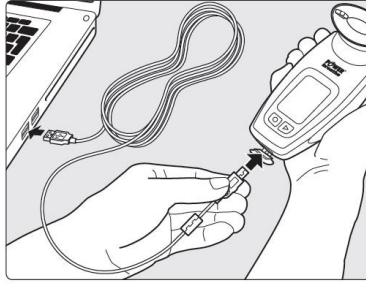


Figure 1 Connect POWERbreathe K series to PC

2. Connect the standard USB end of the cable to your PC USB ports.
3. Ensure that the POWERbreathe K series device is switched OFF. The POWERbreathe LCD should be blank. (**Please note** in some instances the Red Charge light may be on. It is OK to start the Breathe-Link application).
4. Wait for 10 seconds so that the PC can establish communications with the relevant device drivers. For windows 2000 or later a windows message should appear notifying you that a new USB hardware was found. After the initial connection, the wait time should be reduced to no more then 5 seconds.
5. Start up Breathe-Link software, at this stage the application will initialize the POWERbreathe K series device. The Breathe-Link screen will appear on the POWERbreathe K series device. Breathe-Link application will show an Breathe-Link logo screen and the valve will move to the open position indicating that both the POWERbreathe K series device and the Breathe-Link software are synchronised. The connect button will also change text to disconnect indicating that the POWERbreathe K series device and Breathe-link has successfully connected.



Figure 2 Breathe-Link title screen

6. If you receive a message stating that no POWERbreathe K series device is not connected then go to section 3.3 Breathe-Link Driver Information.

3.3 Breathe-Link Driver Information

In instances where the Breathe-Link software drivers fail to find its target USB port please follow the following procedure.

If you are using Windows XP or 2000, the "Hardware Wizard" window displays. The "Install Software" selection is checked as the default choice. Click "Next." The Wizard searches for the driver.

If you are using Windows XP, "Windows Logo Test" window displays. Click "Continue Anyway." The connect/disconnect tones may be heard whenever the POWERbreathe K series is plugged in. This is normal.

If you are using Windows 2000, select "Search for the best driver for your device" and click "Next." Then check the "Specify a location" box and click "Browse." Navigate to the driver directory, which is **C:\Program**

Files\Meade\AutostarSuite\DSI\Driver\2K – XP. Then click "OK" and then "Next."

If you are using Windows 2000, an error may appear stating that the device was disconnected without shutting down. This is normal and should be ignored.

If you are using Vista:

1. When dialog ("New Hardware") "Windows needs to install driver...", select "locate and install driver software."

2. Wait for Windows to 'give up' the search—this may take a long time.
3. When "Windows couldn't find driver software," select "Browse my computer driver software." Select Browse."
4. Navigate to the driver directory: C:\program files
5. When "Windows can't verify the publisher of this driver software" displays, select "Install this driver software anyway."
6. When "Found new hardware – **FTDI Serial USB**' displays, select *Close*.

Plug into any PC port and the drive loads. The software drivers never needs to be installed again. The driver is installed. Click "Finish." The driver is now installed and your PC and will now be able to recognize the POWERbreathe K series device whenever you connect it to the PC.



Chapter 4 Introduction to POWERbreathe training

When training with the POWERbreathe K series device with or without connection with Breathe-Link software you will feel a resistance to inhalation. This resistance is gradually introduced over the first five breaths of your breathing session, after which, the full training resistance is reached. During each breath, you may notice that the resistance is highest at the start of inhalation and gradually 'eases-off' as your lungs fill with air. This is the effect of the POWERbreathe variable loading, which changes during the breath in order to match the changes in breathing muscle strength.

Tip: POWERbreathe training routine consists of 30 breaths, twice a day (once in the morning and once in the evening). This adds up to about 5 to 10 minutes of training per day. Please follow *Coaching good technique* sections of this manual.

4.1 Holding the POWERbreathe device

Make sure you are standing or sitting upright and feel relaxed. Hold the device with your hand cupped around the lower rear section of the device, with your fingers and thumb on the coloured rubber grips. Make sure that your hand doesn't cover the air inlet. Now place the device in your mouth so that your lips cover the outer shield to make a seal and the mouthpiece bite blocks are gripped between your upper and lower teeth.

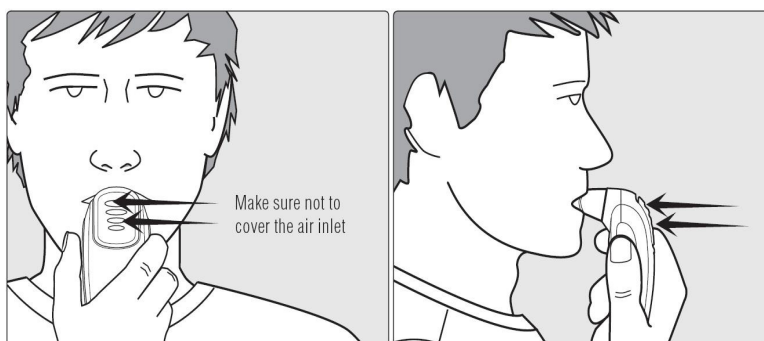
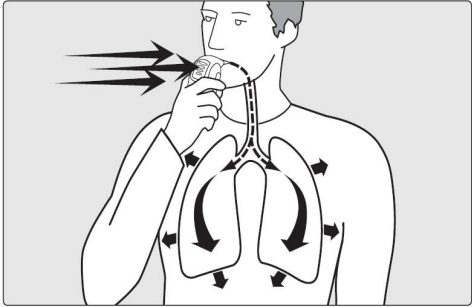
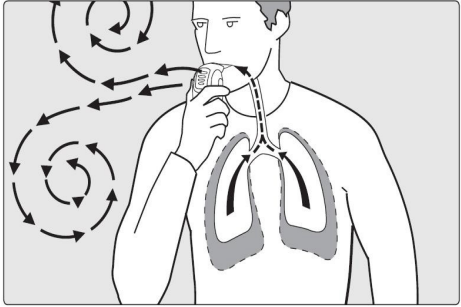


Figure 3 Breathing technique

4.2 Coaching good technique

Correct breathing technique is essential to ensuring effective training. Please follow the guidelines below to guide the patient in the correct breathing technique.

	
Breathe in as hard, as fast and as deeply as possible	Breathe out slowly
<p>Breathe out as far as you can, then take a fast, forceful breath in through the mouthpiece. Take in as much air as you can, as quickly as you can, straightening</p>	<p>Now breathe out slowly and passively through your mouth until your lungs feel completely empty, letting the muscles in your chest and shoulders relax. Pause until you see the pacing bar at the bottom of the Volume Progress Bar (see section Chapter 7 Training Screen window) or until you feel the urge to breathe in again. If it makes you feel more comfortable you can remove the unit from your mouth in order to breathe out, then return it to your mouth before you breathe in again.</p>

NOTE: It is important to breathe out slowly in order to prevent dizziness due to hyperventilation. If you start to feel light headed, slow down or take a break.

Try to complete 30 breaths using the breathing method described. The first two breaths will feel easy, but as you continue to breathe in and out through the device you will find it gradually becomes harder to breathe in. This is the effect of the training resistance starting to increase. The breathing exercises may take some getting used to and you may need to pause for a short rest. You can remove the POWERbreathe device from your mouth to pause and have a short break, simply return the device to your mouth and start breathing again. To quit the training session press the stop button on the control strip on the Breathe-Link software.

Breathing against the training load should be challenging, but not painful. In order to achieve the maximum training benefits, it is important that this load is set at a level appropriate for your personal training requirements (see Training Modes for more detail). It is also important to use the correct breathing technique to maximise the training effects and to prevent dizziness due to hyperventilation.

Important notice: You should pause for 1 second at the end of Inspiration and Expiration, to give the POWERbreathe K series unit time to reinitialize itself.

4.3 Maintaining your breathing

After four to six weeks of training for 30 breaths, twice a day, your breathing muscles should have improved substantially and you should feel less breathless during activity. At this stage you will not need to use your POWERbreathe device every day to maintain your improved breathing. Using your POWERbreathe device twice every other day will be sufficient to continue to enjoy a better lifestyle and improved performance.

4.4 Create your own training routine (K5 and KH2 only)

Alternatively you can create your own training protocol to suit your training preferences. Using the customize feature of the Breathe-link software you have the ability to vary your training by personalising load preferences for each individual breath of a training session.



Chapter 5 Using Breathe-Link for the first time

Starting up the Breathe-Link software for the first time requires you to register your profile information. You are unable to use the software if you fail to Log in as a valid user or a non valid POWERbreathe K series device is not connected to the PC, for more information see Register as a New User section. The POWERbreathe K series unit is your KEY to accessing the features of the Breathe-Link software, without a valid POWERbreathe unit the Breathe-Link software will not operate.

5.1 Register as a New User

The first time you access the Breathe-Link software; you will need to register as a new user. To create a new user profile click on the new user button from the user select dialog box. You are prompted to enter the Units of Measurement, Date of Birth, Weight, Height and Gender. This information will be used to estimate your predicted inspiratory muscle strength and provide feedback on your performance. This information can be edited at any time within the software.

1. Connected the POWERbreathe K series device to the PC via the supplied USB cable
2. Start up the Breathe-Link Software from the start tool bar
3. A Login dialog box appears on screen, click on New User button.

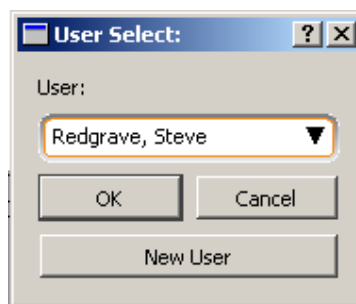


Figure 4 User Select dialog box

4. **New User Profile** Input form will appear. Enter your Name, Height, Weight, Date of Birth and select Unit type. **Please Note:** Predicted inspiratory muscle strength values are estimated based on user profile information you enter.

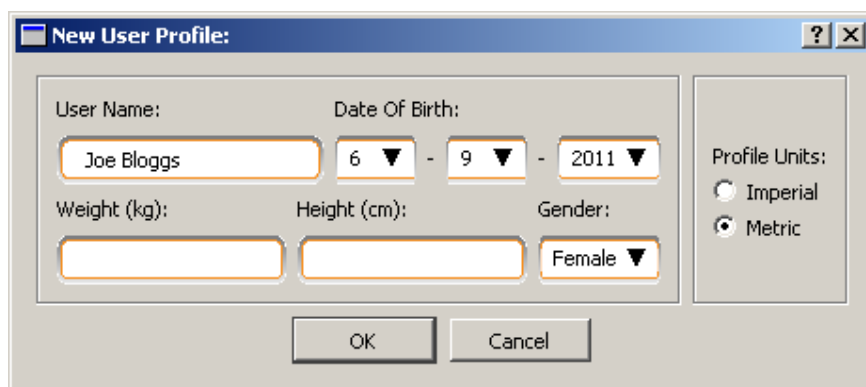


Figure 5 New User Profile input form

5. Click OK. A new user profile will be created.

5.2 Modify User Profile Information

You can modify your user profile information within the Breathe-Link software. You must log in as the user that you wish to edit. See section 5.3 Log in to Breathe-Link. To edit user profile details click in the Breathe-Link logo, you will be presented with a submenu. From the submenu select **User Profile Edit**. **New User Profile** Input form will be presented. In this dialog box modify the required information and click OK.

5.3 Log in to Breathe-Link

Once you have logged in, as a valid user all data associated with the User Profile Login name is available to view and edit.

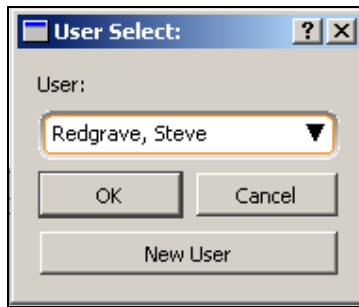


Figure 6 User Select Dialog box

1. From the **User Select** dialog box, select user name from the **User Drop** down list box.
2. Click OK

5.4 Switch Users

It is possible to switch users during normal operation of the Breathe-Link software. Click on the **User Profile** button. The **User Select** dialog box will appear. From the drop down list select required user. Please Note: All current data will be lost.



Chapter 6 Training Modes

The POWERbreathe K series device creates a resistance to inhalation (or load) that is equivalent to weight training for the muscles used to breathe (primarily the diaphragm and ribcage muscles). As with any other form of weight training, the POWERbreathe resistance must be set at a level appropriate to the user in order to train these muscles effectively. For best training results, you should train at a level at which you feel you can only just complete the full session of 30 breaths. Training should feel hard – the more effort you put into you training, the greater the results you will achieve. The Breathe-Link software for K4, K5 and KH2 are equipped with two different methods for setting load: automatic (**Auto**) and user specified (**Manual**) set-up methods (see sections 6.1 and 6.2). The POWERbreathe Breathe-Link software for K5 and KH2 has an additional option that allows you to selected custom training routine (**Custom**) (see section Chapter 11 Create a Custom Routine).

Tip: Before starting training sessions ensure that the correct training settings that you wish to train at has been selected correctly.

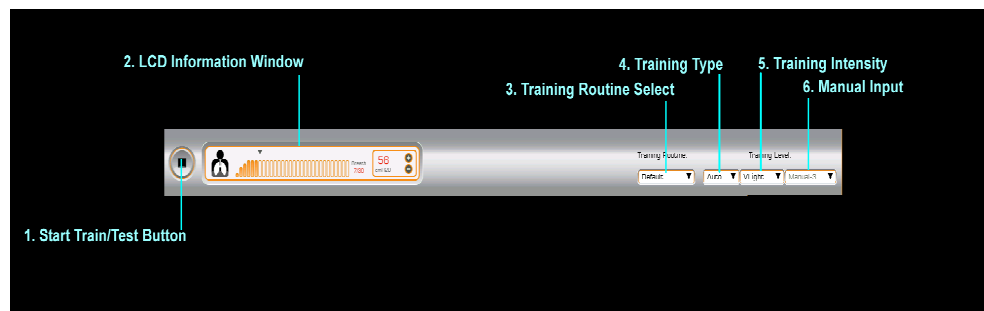


Figure 7 Training Control Strip

6.1 Automatic Setup

By default, the Breathe-Link software is set in the automatic setup mode. When automatic setup is selected, the device will automatically estimate your load requirements at the beginning of every training session. Using this method, the device will adjust the training load every time you start a new session and as the strength of your inspiratory muscles increases.

Automatic setup of this load takes place during the first two breaths of each training session.

Tip: During these breaths there is no load and you should breathe in as **quickly** and as **fully** as possible to ensure that the Breathe-Link software can measure your maximum breathing capability – see '*Breathing Technique*' under the '*Training*' section of this manual.

1. Ensure that the POWERbreathe K series device is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see 5.3 Log in to Breathe-Link).
3. Navigate to **Training Screen** of the Breathe-Link software
4. From the **Control strip**, select '*Default*' option from the **Training Routine list box** (3).
5. In the **Training Type list box** select '*Auto*' mode (4). The **Intensity list box** will be enabled (5) and select the required training intensity that you wish to train at. For more information about intensity levels refer to section *Auto Training Intensity*. The **Manual input box** will be disabled (6).
6. To start the training session click on the **Start Training button** (1).

Auto Training Intensity

When using the automatic setup mode, you may find that the training load intensity is too high or too low, making it too hard or too easy for you to inhale through the device. When in training mode, the load should be at a level at which you feel you can only just complete the full session of breaths satisfactorily.

	V. Light	Light	Moderate	Heavy	V. Heavy
Percentage of Strength Index	40%	50%	60%	70%	80%

Table 1 Training intensity percentages setting

Tip: When using the auto set-up method it may take some time to find your ideal training intensity level. Start at *V. Light* setting and gradually increasing the training intensity until you reach a level at which you can only just complete a full session of 30 breaths.

6.2 Manual Set-up

Manual setup allows you to set the training load yourself and to adjust this load manually as your breathing muscles become stronger or as you feel necessary in order to maintain training intensity. Some users may prefer the greater control of load intensity that this method gives.

To set the load (weight that you wish to train at)

1. Ensure that the POWERbreathe K series device is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see 5.3 Log in to Breathe-Link).
3. Navigate to **Training Screen** of the Breathe-Link software

4. From the **Control strip**, select '*Default*' option from the **Training Routine list box** (3).
5. In the **Training Type list box** select '*Auto*' mode (4). The **Intensity list box** will be disabled (5) . The **Manual input box** will be enabled (6) for you to select a manual training load between 3cmH₂O to 200cmH₂O.
6. To start the training session click on the **Start Training button** (1).

Tip: When using the manual set-up method it may take some time to find your ideal training level. Try gradually increasing the load by around 5 to 10cmH₂O each time you train with the POWERbreathe until you reach a level at which you can only just complete a full session of 30 breaths. Over time, as your breathing muscles strengthen, you will find that it becomes easier to complete 30 breaths at this level. Each time this happens, increase the training level by about 5cmH₂O to maintain the training intensity.

6.3 Custom Set-up

The Custom training mode can be used to access custom training sessions created and uploaded from a computer using the POWERbreathe Breathe-Link software. Custom training sessions may consist of between 3 and 60 breaths, with a custom load set for every individual breath. As loads are set for each breath from the computer, normal level settings (Manual and Automatic) are disabled when in custom training mode. For more about creating a custom session please refer to section *Customise Training Creator*.

1. Ensure that the POWERbreathe K series device is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see **Log in to Breathe-Link**).
3. Navigate to **Training Screen** of the Breathe-Link software

4. In the **Control strip**, under **Training Routine list box (3)** you can select from a list of custom training routines already created and saved.
Select the routine you wish to train at.
5. **Training Load list box (4)**. **The Intensity list box (5)**, and **Manual input box (6)** will be disabled.
6. To start the training session click on the **Start Training button (1)**.



Chapter 7 Training Screen window

Depending upon the version of Breathe-Link software you can have either one (K4 only) or two (feature only available for K5 and KH2) views of real-time data.

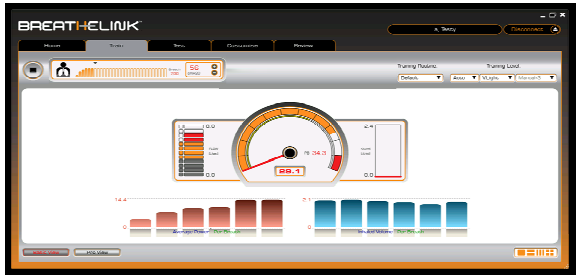


Figure 8 Basic View Screenshot

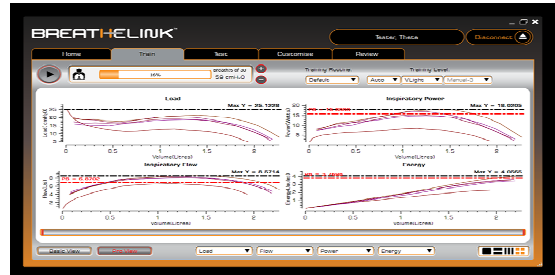


Figure 9 Professional Screenshot

7.1 LCD Information Window

The POWERbreathe Breathe-Link LCD information window is designed to provide you with a 'quick glance' summary of their inspiratory muscle training and test session.

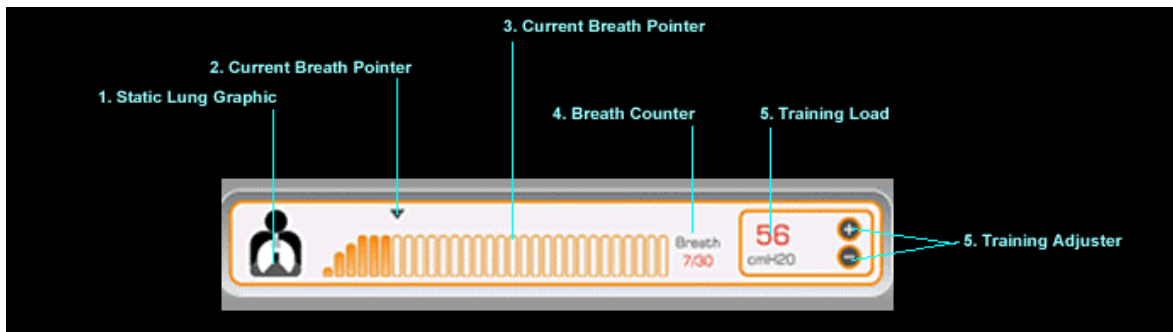


Figure 10 LCD Information window (Train view)

The elements that make up the Breathe-Link **LCD Information** window are:

- Static lungs graphic

- Training load bar graph: the training load bar graph forms the key feature of the LCD information window. Each bar represents one breath (inhalation) of the training session. Number of breaths (inhalations) can vary from 3 to 60. The height of each bar corresponds to the target-training load (resistance) for that breath (3 to 200cmH₂O). Completed breaths are indicated using shaded bars. Breaths yet to be completed are indicated by empty bars (3). Progress is further indicated by a pointer (2). The pointer (2) indicates the current breath - once an inhalation is complete the pointer will move to the next breath.
- Current breath number (4) displays current breath and total number of breaths in training session
- Current breath load (resistance) (5) corresponds to training load (3 to 200cmH₂O). is a measure of resistance to inhalation, and represents the pressure generated in the airways due to the force of the inspiratory muscles during a training session. As the training load decays with increasing lung volume (in order to match the length tension characteristics of the inspiratory muscles), the load displayed corresponds to the resistance at the start of inhalation (i.e. at RV). A higher load result means that the patient is training their inspiratory muscles harder, leading to stronger muscles. Stronger inspiratory muscles will need to work less hard to cope with the demands of breathing, leading to reduced breathlessness. **Please Note:** If at anytime you change the training load using the load adjuster, the original load value will momentarily appear before the new load value is displayed.
- Load adjustment buttons: Load adjustment buttons may be used to increment the training load for all remaining breaths up or down by 1cmH₂O per press. The buttons are disabled during inhalation i.e. resistance cannot be adjusted whilst inhaling. Buttons are enabled during exhalation or if the user has paused breathing.. Following each button press, current breath load (5) will increment and the training load bar graph (6) will be adjusted. **Please Note:** In very rare instances adjusting

the load in an uncontrolled and abuse manor my cause communication problems between the POWERbreathe and Break-Link software. Therefore when adjusting the training load using the up and down buttons you should increment and decrement the values slowly and in a positive fashion a 1 second pause for each click of the adjustment buttons. POWERbreathe International Ltd views any behaviour beyond the one described above as unexpected abusive behaviour.

7.2 Breathe-Link Graphical View

The Breathe-Link basic training dial widget is designed to provide you with real-time inspiratory muscle training feedback. The purpose of this feedback is to motivate you, and provide relevant information that enables you to modify your breathing technique and maximize training effectiveness.

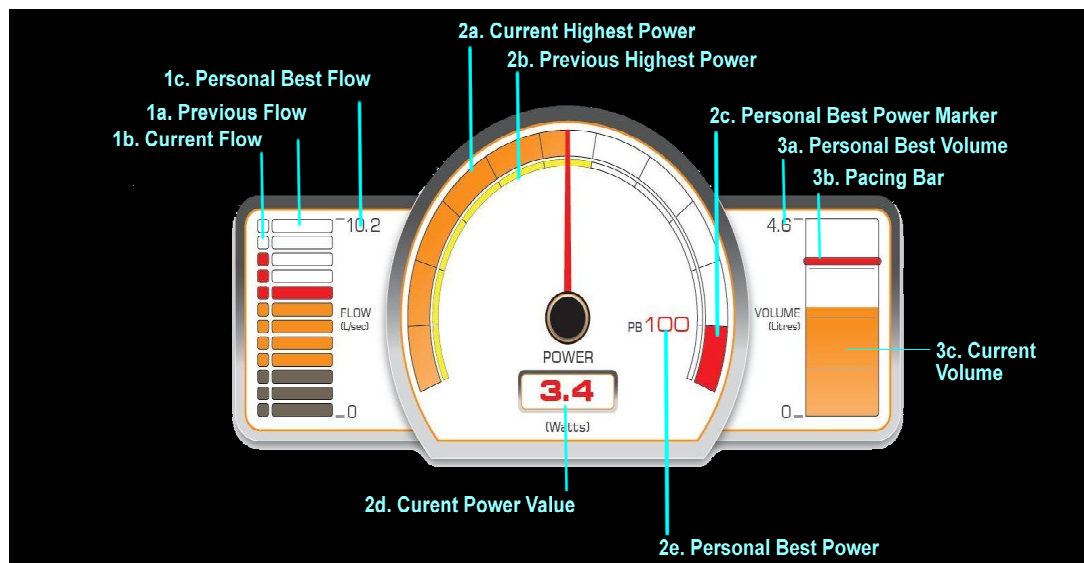


Figure 11 Graphical Dial View

Pacing Your Breathing

Breathe-Link software is equipped with an adaptive pacing guidance feature, which is intended to guide the user to breathe at an appropriate rate (see also **Breathing Technique**). This is important in order to prevent dizziness from breathing too quickly (hyperventilation) during the breathing exercises. Whilst you inhale the **Pacing Bar** remains at the bottom of the volume progress bar, at the end of inhalation the **Pacing Bar** will rise to the top of the box and slowly move down the **Volume Progress Bar**. The default time is 4.5 seconds, you should try to match the speed of your exhalation to the speed of the **Pacing Bar** or wait until the **Pacing Bar** reaches the bottom, once the **Pacing Bar** reaches the bottom, and you should begin inhalation. If you have taken less than time then the **Pacing Bar**, pause, holding your breath until you the **Pacing Bar** reaches the bottom, or until you feel the urge to breathe again, then begin to inhale.

Tip: Aim to always breathe in as **quickly** and as **deeply** as possible, but breathe out as **slowly** and **deeply** as possible so that the time between inhalations is long.

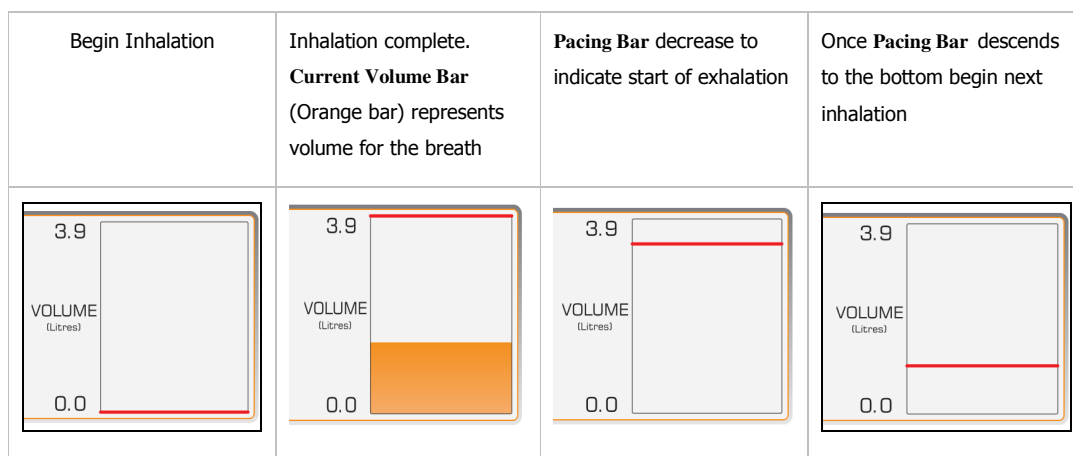


Figure 12 Pacing guidance

Pacing guidance settings

You can change the pacing guidance speed to suit your preferences. This can be achieved by clicking on the pacing option from the submenu under the Breathe-Link logo. A pop window will appear asking you to enter a time for the pacing guidance to descend.

TIP: The default setting of the pacing guidance is 4.5 seconds, you should choose a speed that feels comfortable for you and stops you feeling light-headed.

Volume Progress Bar

Along with the **Pacing Bar** (2) the **Volume Progress Bar** provides further detail of volume of a single breath in a training session. **Current Volume Bar** (3); an instantaneous view of inhaled volume for the breath, this is represented as an orange bar. **Personal Best** (1); the **Volume Progress Bar** top level represents the highest volume achieved in the data set.

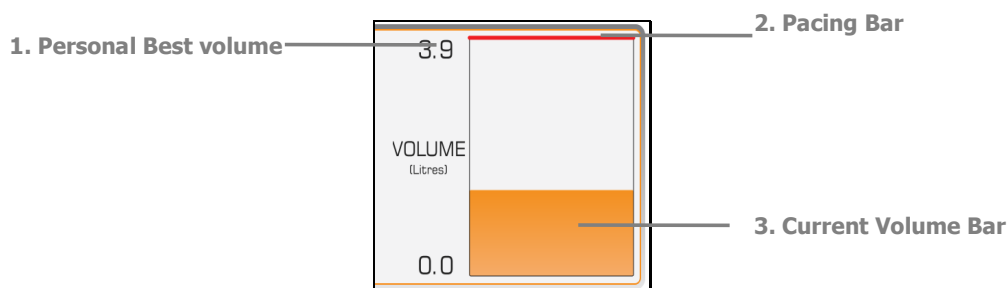


Figure 13 Volume Progress Bar

TIP: You should aim to fill the whole **Volume Progress Bar** with orange for each breath. This means that you are being consistent with your breathing and ensures that you are training at maximum movement of your breathing muscles.

Power gauge

Current highest inspiratory power indicator shows you the highest power achieved for the current breath. The red marker on the dial counter represents the highest ever power achieved in the data set (Personal Best). You should aim to always beat this marker and reach the red zone of the dial counter. The current **Power Value** corresponds to the highest inspiratory power for the current breath and will change for each breath.

Flow Progress Histogram

Instantaneous highest inspiratory flow (2) shows you the highest flow achieved for the current breath. **Personal Best** inspiratory flow value (3) shows the highest ever flow achieved in the data set (Personal Best). You should aim to always beat this marker and reach the top of the flow histogram box. The **Inspiratory Flow Zones** (4) represents the previous highest flow achieved.

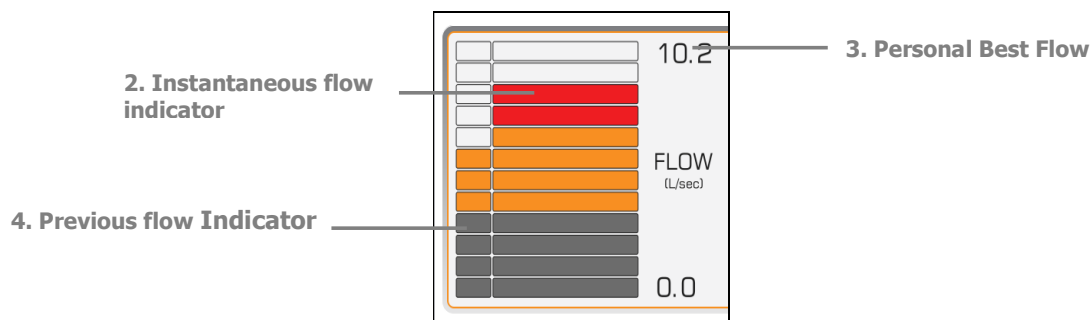


Figure 14 Flow Progress Histogram view

7.2 Professional view

Breathe-Link software allows multi graphical views with the possibility of four different real-time linear plots in operation at any given time. You can select which views you would like to see all the time. The rest can be opened and closed at any time you prefer. You will get the most benefit from Breathe-Link if you set your PC display to its highest resolution setting. This way you can

see more information at the same time. A screen resolution of 1600 X 900 would be desirable, but the best viewing can be obtained with 1600 X 1200 with 19" or 21" monitor. NOTE: To set your monitor resolution, please refer to your monitor manufacture guidelines.

It is possible to view a maximum of four graphs at one time. The five graphs that you can choose to view are:

- Load vs. Volume view: - Real-time pressure curves
- Flow vs. Volume view: - Flow volume curve is a graphical plot that provides useful information about lung functions and the relationship between lung volume and maximal rate of airflow during a training session.
- Power vs. Volume view: - Power volume curve is a graphical plot of you inspiratory muscle output against the resistance set for the training routine for a single breath of a training session
- Energy vs. Volume view: - Energy volume curve is a graphical plot of you inspiratory muscle energy output against the resistance set for the training routine for a single breath of a training session
- Volume vs. Time view: - Volume time curve tracks your training volume against time .

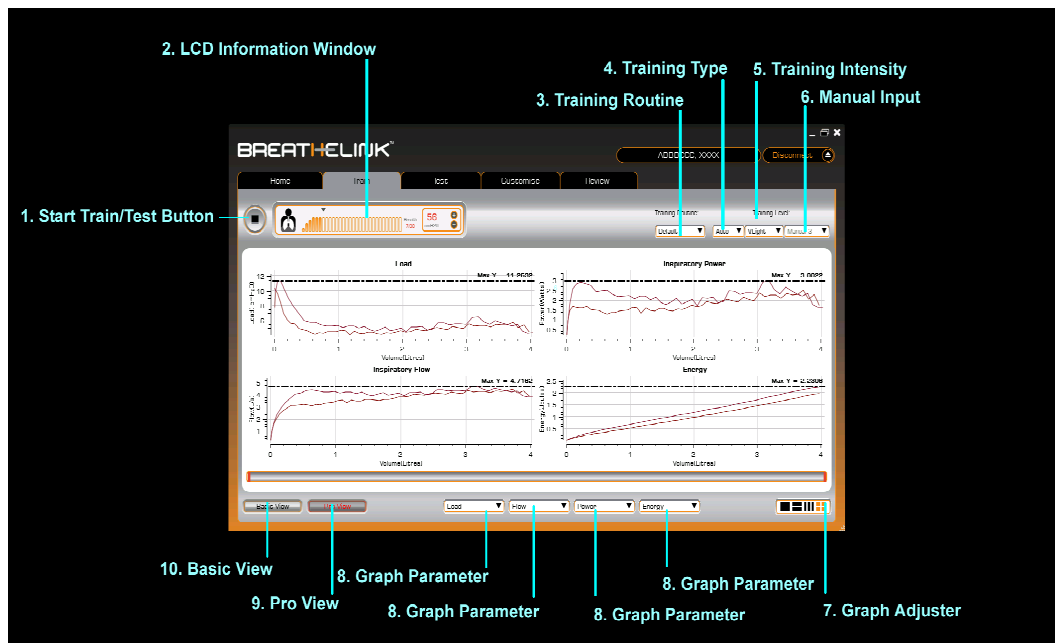


Figure 15 Professional Screenshot detail

The main elements of the Professional view are:

1. Play Button to begin training session
2. LCD Information window see section LCD Information window
3. Select training routine. You can select from two training routine types:
 - a. Default training: Allows you to select manual or auto setup training mode
 - b. Customise List: Selection of training routines created in the customize feature.
4. Training type. Auto Or Manual Select options.
5. Training Intensity (Auto only). Change the intensity of your training session.
6. Load set in manual mode (Manual Only).
7. Graph layout adjuster.
8. Graph Parameters. Set the graphs top show different parameters.
9. Professional View selector (K5 and KH2 only).

10. Basic View selector.

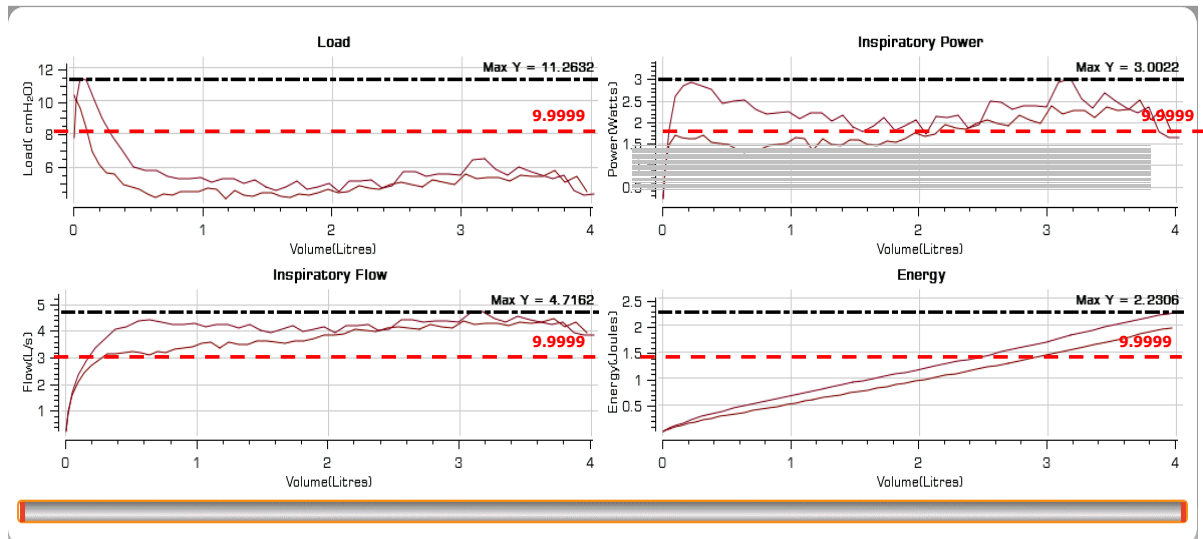


Figure 16 Graph view

Personal Best Marker

The **Personal Best Marker** (red line) shows the highest value across all recorded test sessions. **PLEASE NOTE:** Deleting a session, which the Personal Best was achieved in will alter this value to show the highest value in your existing data set.

Session Best Value Marker

The **Session Best Marker** (black line) shows the highest value achieved for the current test session.

Predicted Normal Value Marker

Predicted Normal Value Marker is interpreted by comparing the results with 'Predicted Values' (or sometimes called 'Reference Values'). These 'Predicted Values' are usually obtained by performing studies on selected populations to obtain equations for specified indices to cover a selected age range.

When performing these studies, factors that are usually taken into account are Age, Weight, Height and Gender this information is obtained during the 'New User Registration' process, however they can also differ with ethnic origin, which not all sets take into account. Two standard deviations are given for most predicted sets either side of the Normal values (Minimum and Maximum), which usually covers the range of which the study was performed¹.

Predicted values will not give a true representation for all populations, and is used only as a guidance marker for you to compare against.

Graph layout adjuster

The number of graphs displayed during a training session can be changed to suit you preferences. Using the **Graph Layout Adjuster** (8 of figure 15) it is possible to display 1 – 4 graphs at a time. It is also possible to select which parameters to plot for each graph by selecting from the graph type list box **(9,10,11,12 of figure 15)**. By change the parameters; the graphs will switch position in accordance to their previous position.

¹ Reference to the paper that was used to create the normal values

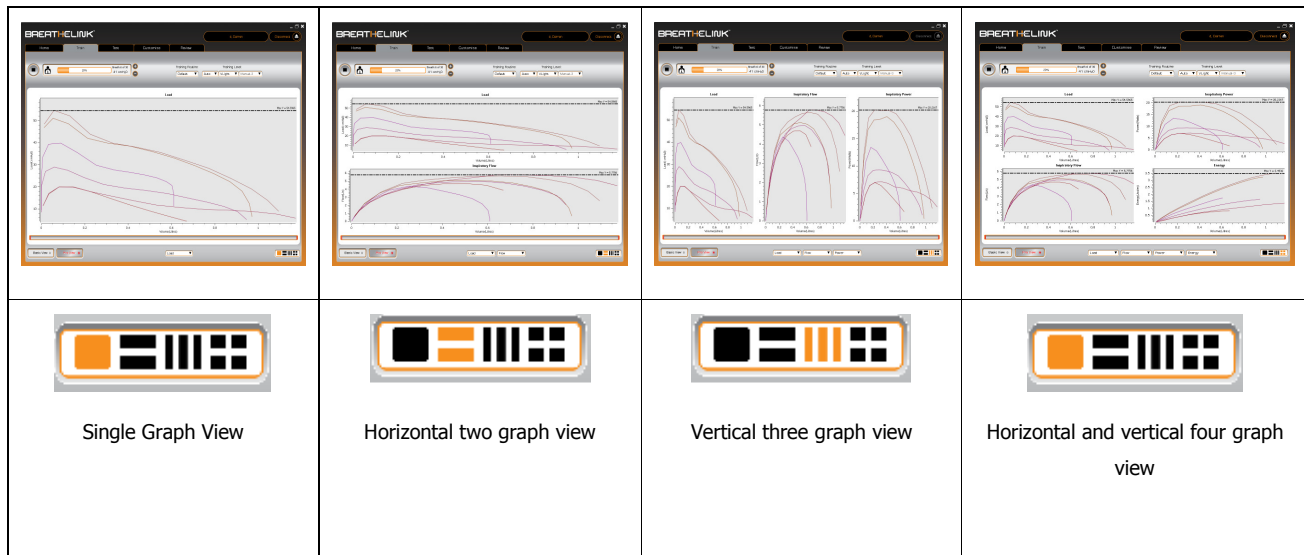


Figure 17 Breathe-Link view layout function

Figure 15 shows the 4 possible graphical views of training routine. You can have as many as 4 graphs displayed at one time. Please note that the number of **Graph Type** (9,10,11,12 of figure 14) selectors will change, corresponding to the number of graphs displayed.

Graphical scale slider

The **Graphical Scale Slider** bar scales all the graphs displayed at one time. By dragging the handles at the end of the slider and moving in

Training Summary Dialog

The summary box provides summary information about the current training session for each breath that has been performed. The summary box can be activated by clicking on the toggle summary dialog option from the submenu under the Breathe-Link logo.



Chapter 8 Test Modes

The Breathe-Link software Test mode can be used to quickly assess your respiratory muscle performance at any time. There are two types of test that can be performed and displayed on the screen. To select the different tests click on the **S-Index test select** button (2) or **PIF** (Peak Inspiratory Flow) test select button (3):

- **S-Index strength test:** This test measures the maximum strength of your inspiratory muscles.
- **PIF test:** This test measures the maximum Peak Inspiratory Flow for a single breath.

For both test modes, you are advised to relax and expire as deeply as possible expelling all the air out of their lungs and then inhale as quickly and as deeply as possible to maximize the manoeuvre. The POWERbreathe K series device will not have a heavy load and therefore you should find that performing this manoeuvre relatively easy compared to a traditional method of measuring maximum inspiratory muscle strength.

8.1 S-Index Test Mode

(Strength Index) is a measure of inspiratory muscle strength derived from the peak inspiratory flow result i.e. a predicted value of MIP. This is indicated by a shaded gray area on the graph (7)

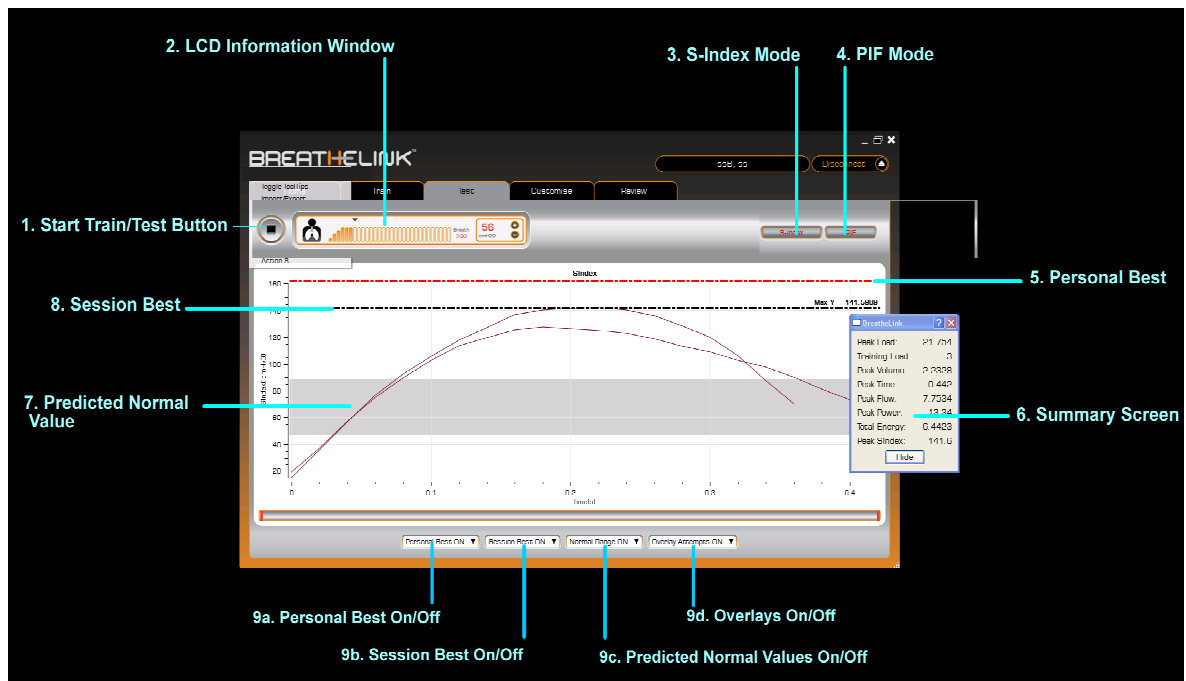


Figure 18 Test Mode Screen

To Perform a S-Index Test follow the following steps

1. Ensure that the POWERbreathe unit is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see 5.3 Log in to Breathe-Link).
3. Navigate to **Test Screen** of the Breathe-Link software
4. From the **Control strip**, under test mode, select **S-Index test** select button (3) from the test mode options
5. Sit upright, fit the nose clip and relax (the use of a nose-clip is recommended).
6. When you are ready click on the **Start Training** button (1).
7. Hold the unit, keeping it away from your mouth. Do not jerk the unit (this can de-stabilize the unit)
8. Exhale as deeply as possible, then insert the mouthpiece carefully into your mouth, not like a trumpet, but clamping it gently between your teeth.

9. Seal your lips round the mouthpiece and keep your tongue down.
10. Breath in as fast and as long as possible. Keep blowing for at least 6 seconds

8.2 PIF Test Mode

To Perform a PIF Test follow the following steps

1. Ensure that the POWERbreathe unit is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see 5.3 Log in to Breathe-Link).
3. Navigate to **Test Screen** of the Breathe-Link software
4. From the **Control strip**, under test mode, select **PIF test** select button (3) from the test mode options
5. Sit upright, fit the nose clip and relax (the use of a nose-clip is recommended).
6. When you are ready click on the **Start Training button** (1).
7. Hold the unit, keeping it away from your mouth. Do not jerk the unit (this can de-stabilize the unit)
8. Exhale as deeply as possible, then insert the mouthpiece carefully into your mouth, not like a trumpet, but clamping it gently between your teeth.
9. Seal your lips round the mouthpiece and keep your tongue down.
10. Breath in as fast and as long as possible. Keep blowing for at least 6 seconds

Tip: To perform the test, breathe out as far as you can until your lungs are completely empty. Now place the mouthpiece into your mouth and inhale

as **hard**, as **fast** and as **deeply** as possible until your lungs are completely full.

About PIF Test Results:

(Peak Inspiratory Flow) is a measure, which reflects the ability of the inspiratory muscles to contract rapidly and to overcome the inherent resistance and elastance of the respiratory system. Inspiratory musculature demonstrates a force-velocity relationship and hence inspiratory flow typically shows a reduction at all lung volumes in response to inspiratory muscle weakness. Improvements in inspiratory muscle strength may be observed by monitoring changes in peak inspiratory flow.

Information: Inspiratory muscles also adhere to the principles of training specificity, and therefore training at high resistive loads but low flows may result in increases in inspiratory muscle strength without observable changes in peak inspiratory flow.

8.3 Test Summary Dialog

The summary box provides summary information about the current test breath that was performed. The summary box can be activated by clicking on the toggle summary dialog option from the submenu under the Breathe-Link logo.



Chapter 9 Test Screen View

To perform a test with real-time data plots click on the Test tab on top of the main Breathe-Link window. Make sure that you have logged in as the correct user, this is important with regards to calculating the Predicted normal values, and Personal Best markers.

Personal Best Marker

The **Personal Best Marker** (red line) shows the highest value across all recorded test sessions. **PLEASE NOTE:** Deleting a session, which the Personal Best was achieved in will alter this value to show the highest value in you existing data set. To enable or disable this feature, click on the **Personal Best option list box** (9a of figure 18) and select ON or OFF.

Session Best Value Marker

The **Session Best Marker** (black line) shows the highest value achieved for the current test session. To enable or disable this feature, click on the **Session Best option list box** (9b of figure 18) and select ON or OFF.

Predicted Normal Value Marker

Predicted Normal Value Marker is interpreted by comparing the results with 'Predicted Values' (or sometimes called 'Reference Values'). These 'Predicted Values' are usually obtained by performing studies on selected populations to obtain equations for specified indices to cover a selected age range.

When performing these studies, factors that are usually taken into account are Age, Weight, Height and Gender this information is obtained during the 'New User Registration' process, however they can also differ with ethnic origin, which not all sets take into account. Two standard deviations are given

for most predicted sets either side of the Normal values (Minimum and Maximum), which usually covers the range of which the study was performed².

Predicted values will not give a true representation for all populations, and is used only as a guidance marker for you to compare against. To enable or disable this feature, click on the **Predicted value option list box** (9c of figure 18) and select ON or OFF

Overlay Attempts

Allow you to overlay test breaths performed for the test session. This feature provides a easy way to compare tests performed. You can switch this feature ON or OFF by toggling the **Overlay toggle** (9d of figure 18).



Chapter 10 Data Review Screen

The **Review Screen** allows you to review your history test and training sessions successfully completed.

10.1 Training Review Screen

The review screen allows the user to review past training sessions in multi levels of detail.

- a. Training History Level: Training History provides an historical overview of training sessions successfully completed. Each bar in the graph represents a training session. The values shown are:

² Reference to the paper that was used to create the normal values

- **Average pressure for the entire session:** Represents the average pressure generated in the airways due to the force of the inspiratory muscles during a training session. As the training load decays with increasing lung volume (in order to match the length tension characteristics of the inspiratory muscles), the average pressure displayed corresponds to the average pressure resistance at the start of inhalation (i.e. at RV) to end of inspiration (i.e. at tidal lung volume) for each breath averaged cross the entire session. A higher average pressure result means that you are training their inspiratory muscles harder, leading to stronger muscles. Stronger inspiratory muscles will need to work less hard to cope with the demands of breathing, leading to reduced breathlessness. **(An average of averaged pressure generated for each individual breath in the session)**

Information: When training using the automatic set-up method, the load displayed is based upon estimated inspiratory muscle strength. This is measured each time a new training session is completed and should reflect improvements in inspiratory muscle strength. When using the manual set-up method, load displayed is the same as the level entered. In this case, load displayed will track the increases in load that you manually enter via the level setting screen.

- **Average flow for the entire session:** Represents the average flow generated in the airways due to the force of the inspiratory muscles during a training session.
- **Averages power for the entire session:** Represents the average power of muscle performance, which combines strength, and speed of movement ($\text{Pressure} \times \text{Flow}$) averaged for individual breaths of the session. More powerful muscles will be more resistant to fatigue at a given level of work and therefore, breathlessness will be reduced. The value displayed is the average power for all breaths in a training session. **(An average of averaged power generated for each individual breath in the session)**

- **Total energy for the entire session:** Represents a measure of the mechanical work (or effort) of breathing during your breathing training session. It is a result which combines the force exerted by your inspiratory muscles and the volume of air inhaled. The higher the value of breathing energy you attain, the longer and harder you have worked your inspiratory muscles. (**An total energy expended generated from each individual breath in the session**)
- **Average volume for the entire session:** Represents the measure of the average amount of air inhaled per breath during a training session. A higher value of volume indicates that the patient is breathing deeply and training the inspiratory muscles across their full range of movement. A relatively small value of volume may indicate that the patient is training at a level that is too high and is unable to properly complete each breath. (**An average of averaged volume generated for each individual breath in the session**)

For more detail, hover the mouse pointer over the data point on the graph; a **Review Summary box** will appear containing a detailed breakdown for the given session performed.

To drill down further for a more detailed view of the session you can double click the data point on the graph, which will traverse to the session detail for that session.

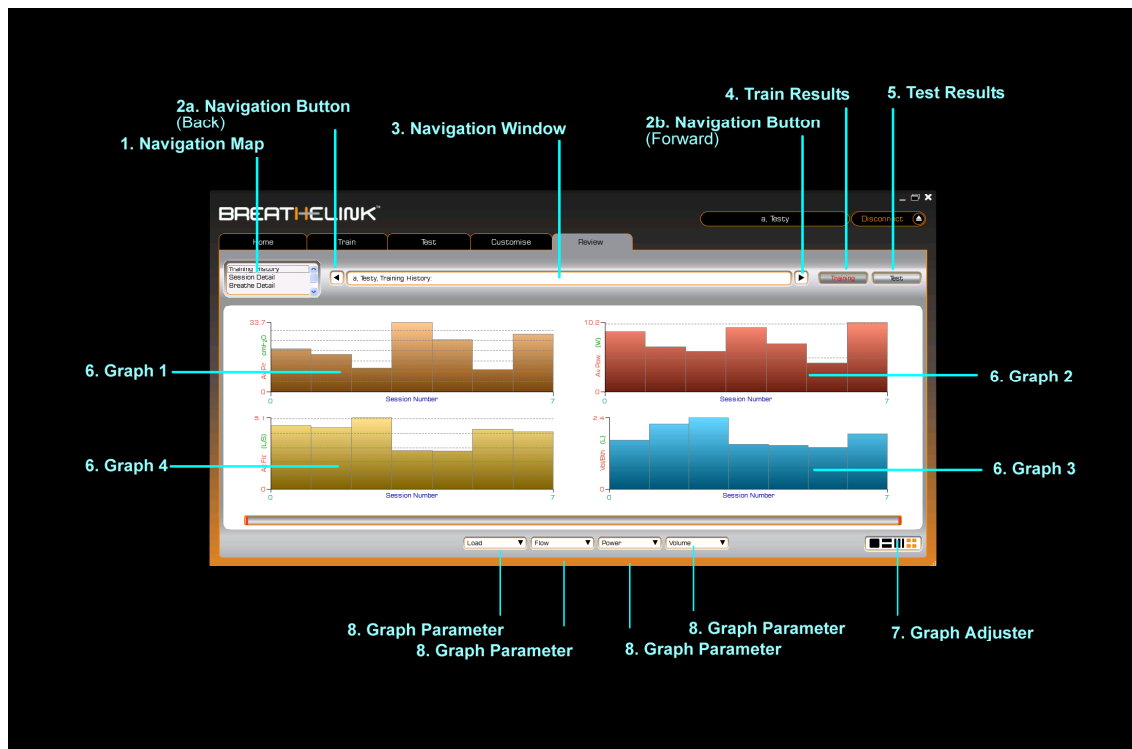


Figure 19 Review Screenshot History view

b. Session Detail: Session detail provides a detailed view of a training session successfully completed. Each bar in the graph represents an individual breath from the session. The bars and associated values shown are:

- **Average pressure for a single breath in the session:** Represents the average pressure generated in the airways due to the force of the inspiratory muscles for a single breath of a training session. As the training load decays with increasing lung volume (in order to match the length tension characteristics of the inspiratory muscles), the average pressure displayed corresponds to the average pressure resistance at the start of inhalation (i.e. at RV) to end of inspiration (i.e. at tidal lung volume) for each breath averaged cross the entire session.
- **Average flow for a single breath in the session:** Represents the average flow generated in the airways due to the force of the inspiratory muscles for a breath in the session. **Information:** As the first

two breathes of a training session is unloaded you will observe that these values will be higher than subsequent loaded breaths.

- **Averages power for a single breath in the session:** Represents the average power of muscle performance, which combines strength, and speed of movement (Pressure x Flow) averaged for a single breath of the session. More powerful muscles will be more resistant to fatigue at a given level of work and therefore, breathlessness will be reduced.
- **Total energy for a single breath in the session:** Represents a measure of the mechanical work (or effort) for a single breath during your training session. It is a result which combines the force exerted by your inspiratory muscles and the volume of air inhaled. The higher the value of breathing energy you attain, the longer and harder you have worked your inspiratory muscles.
- **Average volume for a single breath in the session:** Represents the measure of the average amount of air inhaled per breath during a training session. A higher value of volume indicates that the patient is breathing deeply and training the inspiratory muscles across their full range of movement. A relatively small value of volume may indicate that the patient is training at a level that is too high and is unable to properly complete each breath.

You can traverse between the sessions using training **Navigation Arrows** (2a, 2b) on the control strip. The navigation window displays the time and session details (2).

Tip: You should aim to be consistent for all breathes in that given training session.

c. Breathe Detail:

Breathe detail allows minute analysis of each breath performed in a training session. You can traverse from breath to breath within the training session

selected by using the training **Navigation Arrows** (2a, 2b) on the **Control strip**
The navigation window displays the time and session details for the breath that you are viewing.

TIP: If you find yourself lost in all the data you can use the Review Navigation Map window to return to the main History Training level of the data.

Delete a Training session

You can only delete an entire session from Breathe-Link software within the **Review Pane**, Training History view. Once the selected session is deleted all Personal Best for the history of sessions performed will be recalculated to reflect the new Personal Bests within the current training data set. PLEASE NOTE: this operation is irreversible; therefore caution when deleting data should be taken.

1. Ensure that the POWERbreathe unit is synchronized with the Breathe-Link software.
2. Log in to the Breathe-Link software (see **Log in to Breathe-Link**).
3. Navigate to Training pane of the Breathe-Link software
4. Click on **Review tab** to enter the Review Screen.
5. The training history data will be displayed in four graphs. Using the mouse hover the mouse pointer over a session data point on the graph that you wish to delete.
6. Click the right mouse button whilst still hovering over the session data point to delete. The session data point will turn red and a pop up button will appear giving the option to delete the session figure 21.
7. Click the **Delete button** to confirm deletion.

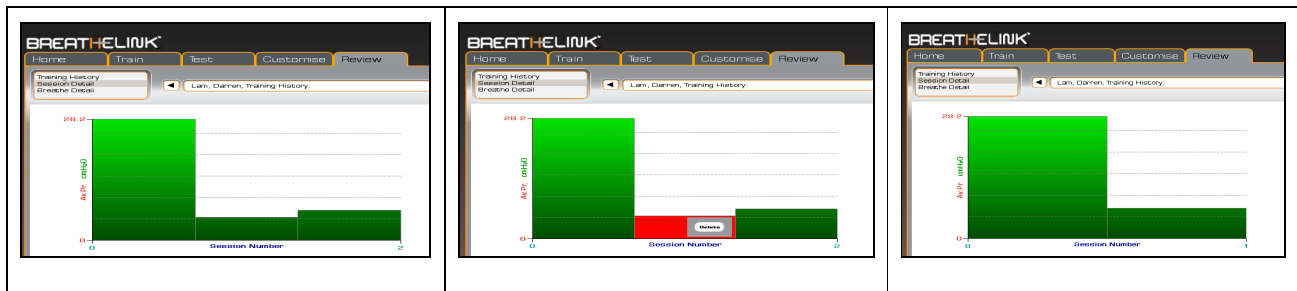


Figure 20 Deletion operation: 1: No deletion 2: Right mouse click 3: New training data set

The session will be deleted from Breathe-Link user profile. All Personal Bests will be recalculated to reflect the best results of the current data set.

10.2 Test Review Screen

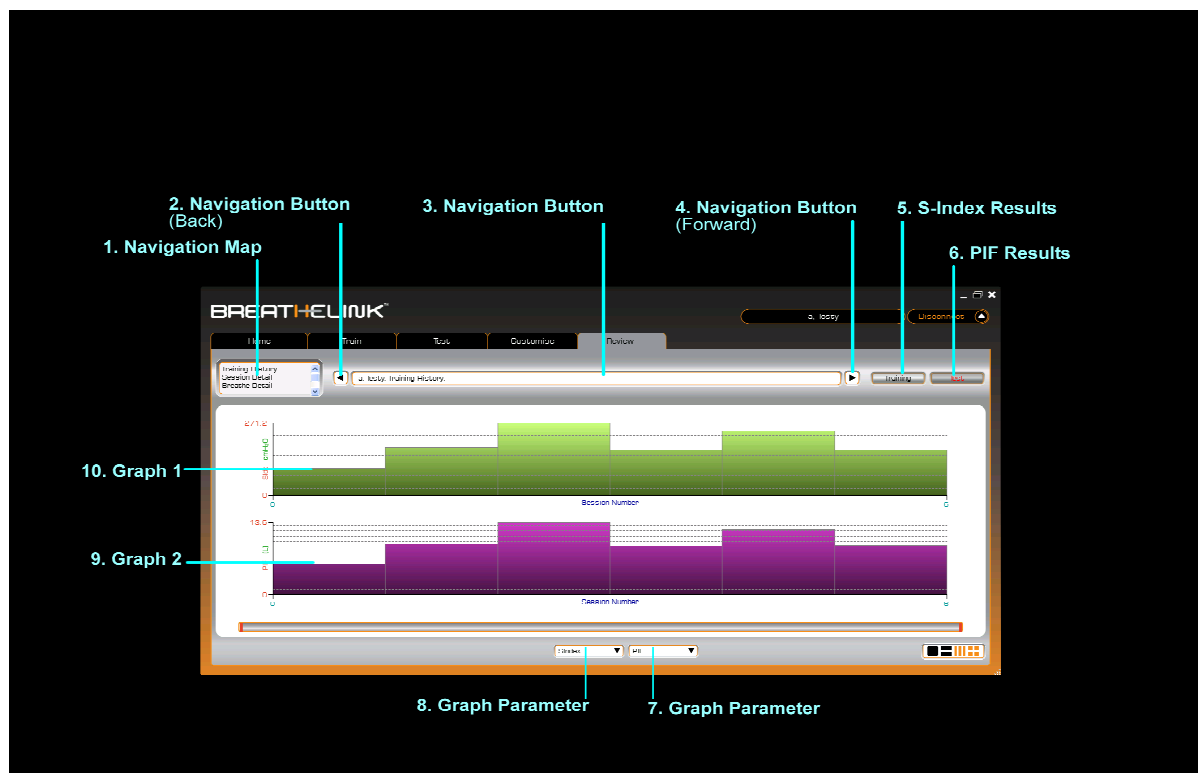


Figure 21 Test Review screenshot

S-Index Results view

(Strength index) is a measure of your inspiratory muscle strength. Your strength index result should be compared to the predicted normal values. You should see a gradual increase of S-index in just 4 weeks.

Tip: You may see a plateau of S-index after 4 weeks of training, at this point you are in the maintenance phase of training and you should still continue to use the device or your results will go down. Alternatively to have more variety in your training you could experiment with different types of training by creating your own routines to further increase your breathing muscles by using the Custom feature (K5 and KH2 only)

PIF Results view

(Flow) is a measure of the maximum rate at which you can inhale air into your lungs. The measurement is based upon the maximum measured flow rate during the test breath. This measurement gives an indication of the speed at which your inspiratory muscles can contract. As you continue to train your inspiratory muscles over a period of weeks you should see improvements in your Flow result.

Please see section **Delete a Training Session** for details on how to delete a Test session



Chapter 11 Creating a Customise Routine

The Breathe-Link software Customise screen enables you to create custom inspiratory muscle training routines. Options include the ability to change the number of training breaths (3 to 60 breaths), to specify loads for each individual breath (3 to 200cmH₂O), and to assign a unique name to the new training session. Once created, a training session may be saved to the PC and accessed from the **Train Screen**, or uploaded to the POWERbreathe K-Series device EEPROM for standalone use when not connected to a PC.

11.1 Custom Screen

The Custom Screen is an interactive environment that allows you to create custom training sessions to suit your training goals. Adopting similar principles to other training routines you are able to create Endurance Training, Hill Training or even Interval Training.

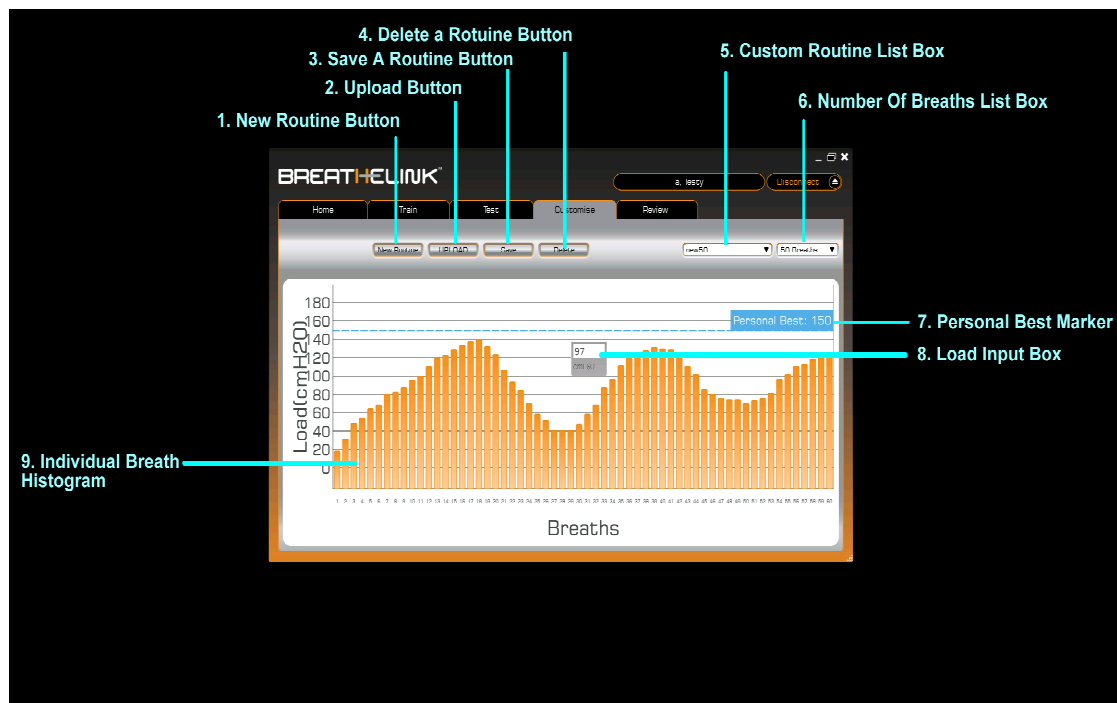


Figure 22 Customise Screenshot

The main elements of the Custom Screen are

1. New Routine button: selecting this button loads a new blank training session template. By default, the training session will consist of 30 breaths with each breath set at 3cmH₂O.
2. UPLOAD button: selecting upload sends the current custom training settings to the POWERbreathe K-Series device so that it can be stored in EEPROM for access when away from the PC
3. 'Save' button: saves the current training session to PC memory
4. 'Delete' button: deletes the current training session
5. Routine Name combo/text box: may be used to select a pre-existing saved session (combo-box feature) so that it can be edited, or can be used to enter a new training routine name (text box feature)
6. 'No of Breaths' combo/text box: may be used to edit the number of breaths in the training session – either by selecting the number of breaths from the combo box or by entering a number in the box
7. Personal best display: highest training load achieved in any training session (cmH₂O)
8. Load text entry box: when the user clicks on a bar of the chart a text entry box will appear, allowing the user to enter a value of load for that breath
9. Load slider: when the user hovers the mouse over the top edge of the bar, slider arrows will appear allowing the user to drag the bar up or down (left mouse button hold and drag) to set training load.

Create Customise Routine

To create a new routine to be saved on the PC:

1. Click on **Custom tab** to enter the Custom Screen

2. A default histogram view will be displayed on screen
3. Click on the **New Routine button** (1) to create a new routine.
4. In the **Routine Name combo/text box** (5) will appear blank, type in the name for the custom training routine to be created. You are ready to create a custom routine.
5. To enter the number of breathes for the custom routine; click the **Number of breathes text box** (6) type in a number ranging from 3 – 60. The number of histogram bars will reflect the number of breaths that you have chosen. Each bar represents an individual breath RV training target load. (**PLEASE NOTE:** The first and second breaths will automatically set at 3cmH2O. This is partly due to the fact the POWERbreathe K series device is required to measure a training parameters for the training session.)
6. You can alter this training target load by dragging the Histogram up or down using the mouse, alternatively by hovering over the top of the Histogram, a floating load text entry box (10) will appear showing the current training target load, click in this text box and type in required load.
7. Once the desired custom routine has been set up click on the **Save routine button** (3).

Custom Routine Upload to POWERbreathe

It is possible to upload a single routine to the POWERbreathe K series device, which means that you are able to training with this routine without the need to connect to the PC.

1. Make sure the POWERbreathe K series device is connected to the PC and has synchronised correctly
2. Click on **Custom Tab** to enter **Custom Screen**
3. To create a new custom routine to upload see section Create Customise routine. To select an existing custom routine click in the

Routine Name combo/text box (5) and selected the required routine from the list. The routine selected will be displayed on the custom screen

4. Once the desired routine has been selected, click on the **Upload button** (2).
5. A warning message dialog box should appear warning you that current custom routine saved on the POWERbreathe K series device will be overwritten.
6. Click Yes
7. After a few seconds a message dialog box appears confirming the upload of a new custom routine has been saved on the POWERbreathe K series device.

Custom Routine Delete/Modify

To delete or modify an existing custom routine saved on the PC.

1. Make sure the POWERbreathe K series device is connected to the PC and has synchronised correctly
2. Click on **Custom Tab** to enter **Custom Screen**
3. To select an existing custom routine click in the **Routine Name combo/text box** (5) and selected the required routine from the list. The routine selected will be displayed on the custom screen
 - a. Modify existing custom routine
 - i. At this point you can modify the existing custom routine selected from the routine name list. The custom routine chosen will be loaded and represented on the custom histogram graph
 - ii. Once required changes have been made click on the **Save Custom button** (3).

- iii. The old custom routine will be overridden with the modified routine.
- b. Delete existing custom routine
 - i. Click on the **Delete Routine button** (4)
 - ii. A message dialog box will appear asking for confirmation of the deletion of the file.
 - iii. Click Yes the custom routine will be deleted from the list.



Valve Head Error Message

If the valve head becomes clogged with dirt or saliva then the POWERbreathe unit cannot function correctly and an error message may be displayed. When this happens, you should follow the cleaning instructions detailed in the POWERbreathe K series unit.

Connect and Disconnect POWERbreathe K series device

To use the Breathe-Link software a valid POWERbreathe K series device needs to be connected and synchronized. In normal operation the Breathe-Link software will automatically detect a valid POWERbreathe K series device and attempt to synchronize with the device. In some instance you may wish to manually connect and disconnect, by clicking on the **Connect/Disconnect button**. The text should turn white and display the word 'Disconnect', which indicates that a POWERbreathe device is connected and is ready to be used. The functionality of the button changes so that if you click on the Disconnect button the POWERbreathe will not be synchronized with the Breathe-Link

software. Conversely the **Connect/Disconnect button** becomes a Connect button.



Chapter 12 Acknowledgements

i)

Credits

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Breathe-Link is based in part on the work of the Qt Cross Platform Development Framework (<http://qt.nokia.com/>) written by Qt Development Frameworks, the Qwt project (<http://qwt.sf.net>) written by Uwe Rathmann(rathmann@users.sourceforge.net), Josef Wilgen & qextserialport (<http://code.google.com/p/qextserialport/>) written by Regents of the University of California

ii)

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